

USER MANUAL

SK-P500(D)/M846AI



1. Warning & Caution

- 1) Please study the instruction manual before your applications and keep it for your future reference.
 - 2) Do not flash LED light directly on the eyes when LEDs are on.
 - 3) Do not install the camera on a unstable surface. It will cause falling or other hazards.
 - 4) Do not use improper power, it could cause fire or electric shock.
 - 5) Do not disassemble or remodel the camera, it could cause fire, electric shock or other hazards.
 - 6) Stop using the camera when you find a malfunction like smoke or unusual heat, it could cause fire or electric shock.
 - 7) Do not adhere dangerous aticles to the camera
 - 8) Do not leave the unit along an unstable stand or table.
 - 9) Power cable or Video cable should be always loose. Do not keep the cables tight or twisted.
 - 10) Use the camera unit within given temperature and electricity limit.
 - 11) Use 24V AC or 12V DC, 1.5A regulated power supply.(Supply 24V AC to dual voltage version only.)
 - 12) Make sure that installation should be done by qualified service person only.
 - 13) Do not disassemble the unit by yourself. When there is problem with the unit please contact after-sale service center or the shop where you bought.
 - 14) Stop operating and separate connector from the unit if below cases happen.
 - When power connector or video connector is broken.
 - When body is broken and dropped.
 - When it is not operating though it is set correctly by the manual.
- ※If you meet any strange cases, please call the shop where you purchased.



If the product is to be put out of operation definitively, take it to a local recycling plant for a disposal which is not harmful to the environment.

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2. FEATURE

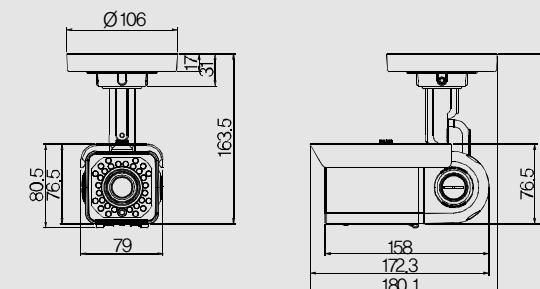
- 1) New generation, new technology Gen V DSP adopted
 - 2) Long visible range at night.(40m Max. indoors)
 - 3) This camera adopts split glass technology to prevent IR light reflection.
 - 4) This camera has vari-focal IR lens to prevent defocusing under IR lighting.
 - 5) Adopted Smart DNR technology, It reduces noise efficiently in low light condition.
 - 6) DWDR(Digital Wide Dynamic Range)
 - 7) IR cut filter is removed at night to receive maximum available light.
 - 8) This product can match for any circumstances very well.
 - 9) This product is suitable for 24 hours surveillance with optical multi-coating filter according to IR LED and CCD.
 - 10) This product is weather-proof to resist rain, snow and other weather factors. (IP65)
 - 11) This product is made of corrosion-free surface to resist rust and corrosion for a long time.
 - 12) Sunvisor of this product can help the camera get the picture clearly.
 - 13) Power & video cables are concealable(Cable through bracket).
 - 14) This camera adopts 3-axis bracket to install on the ceiling and wall.
 - 15) You can connect 24V AC or 12V DC regardless polarity.
(Dual power product only)
 - 16) A fan enables the camera to keep the proper operation at high temperature.
(option)
— Fan ON/OFF temperature. (*ON/OFF point of fan is subject to environment)
- | | ON | OFF |
|-----|-----|-----|
| Fan | 45℃ | 40℃ |
- 17) D&N Mode, Mirror, BLC, HLC, DC Lens/Manual Lens, FLK, AGC, White balance, Camera ID, Motion detection, LSC, Privacy, Gamma, Language functions are controllable by OSD menu.
 - 18) Horizontal Resolution 650 TV-Lines : Clear image quality has been achieved by employing a 1/3" SONY Super HAD CCD II with 410,000 pixels(NTSC), 470,000 pixels(PAL), which provides a horizontal resolution of 650 TV-lines.
 - 19) Privacy function(8 programmable zone) : The privacy zone function makes it possible to mask specific areas of the scene from view.

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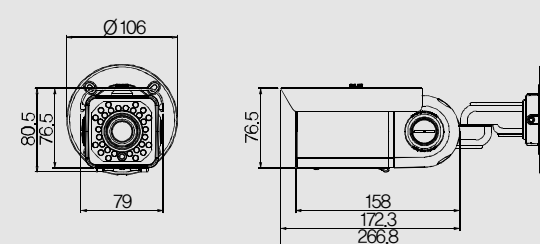
- 20) Built-in Day&Night lens : This camera has a function that automatically selects the mode that is appropriate for daytime or night-time conditions. The COLOR mode operates in daytime conditions to provide optimum colors, and BW mode operates in night-time conditions to enhance the definition of the image.
- 21) Smart IR : When IR LED is turned on in B/W, the objects can be clearly identified due to the function that decreases screen saturation of objects within a short distance.

3. DIMENSION

Ceiling Mount

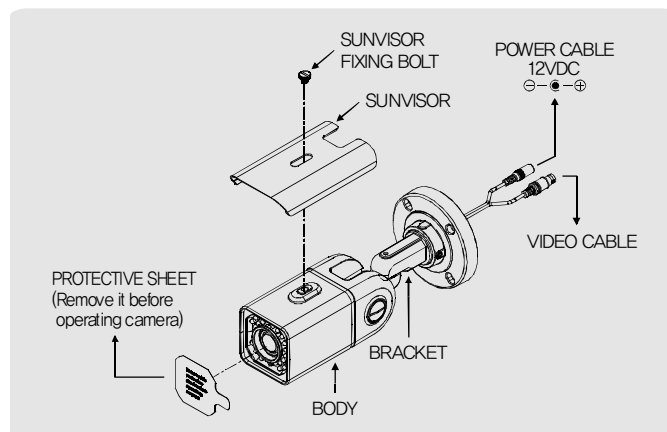


Wall Mount



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4. CONFIGURATION



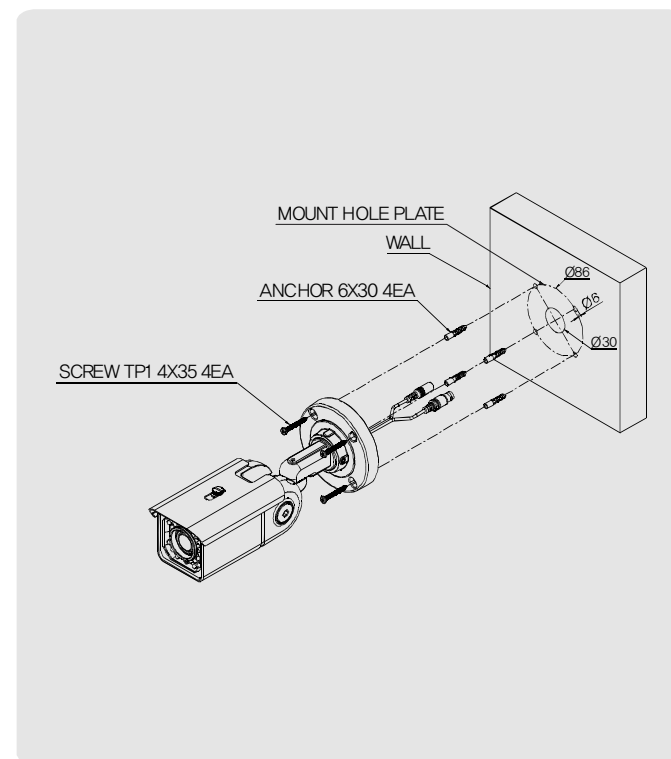
5. ACCESSORIES

- | | | |
|--|---|---------------------------------|
| | → | ANCHOR 6x30 4EA |
| | → | SCREW 4x35 Tp1 BIND SUS 4EA |
| | → | WRENCH TORX T10 1EA |
| | → | HEXAGON WRENCH 3.0mm L TYPE 1EA |
| | → | BOLT 1/4"-20UNC L=6, 1EA |
| | → | MOUNT HOLE PLATE |

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6. WALL MOUNT

6.1 How to install 1

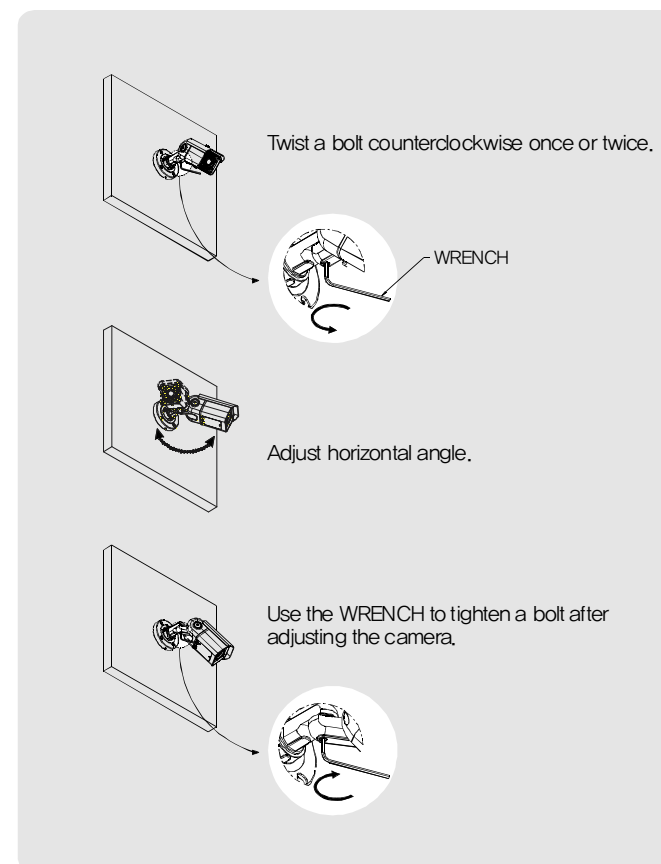


- 1) Make a hole of Ø30mm in diameter for passing cable.
- 2) Using the mount hole plate, drill four holes on the wall.
- 3) Insert the anchors.
- 4) Fix the screws.

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6.2 How to install 2(Adjust horizontal angle)

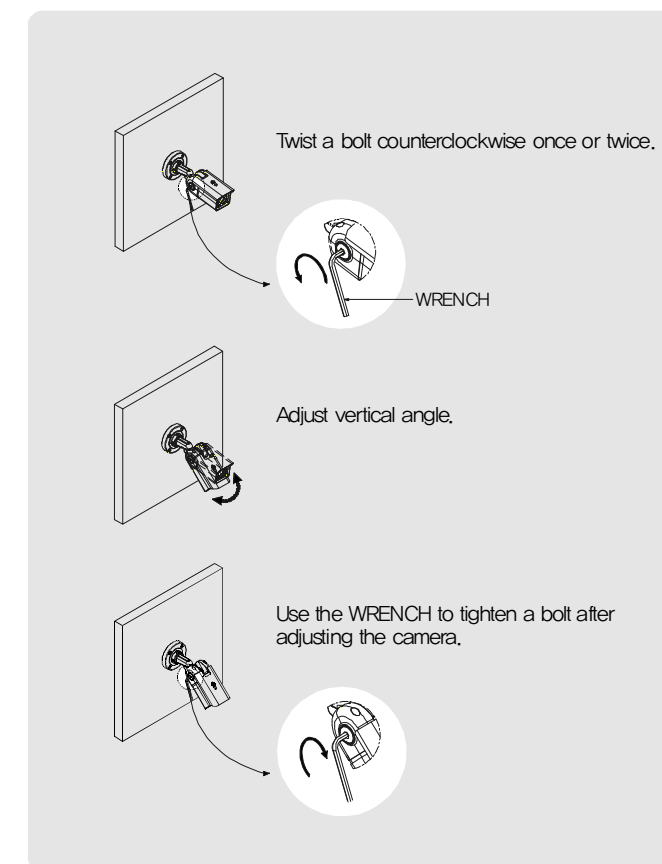
- 1) Loosen a bolt to adjust horizontal angle of the camera.
- 2) Use the WRENCH to tighten a bolt after adjusting the camera.



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6.3 How to install 3(Adjust vertical angle)

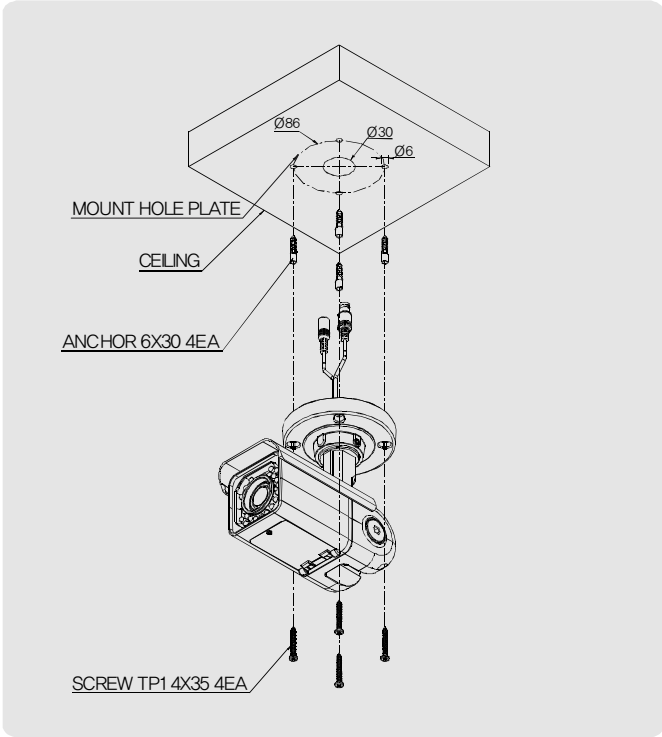
- 1) Loosen a bolt to adjust vertical angle of the camera
- 2) Use the WRENCH to tighten a bolt after adjusting the camera.



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7. CEILING MOUNT

7.1 How to install 1

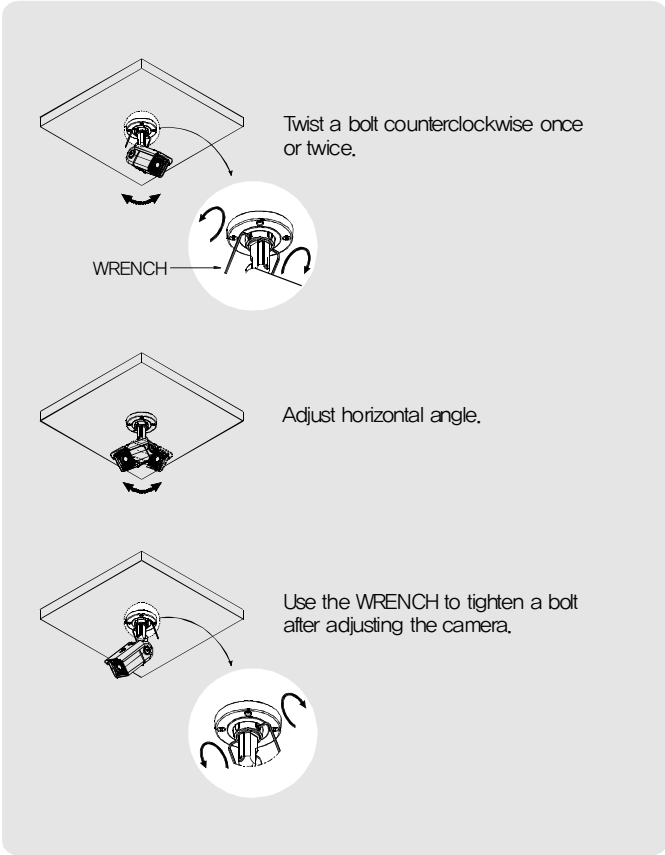


- 1) Make a hole of $\varnothing 30$ mm in diameter for passing cable.
- 2) Using the mount hole plate, drill four holes on the ceiling.
- 3) Insert the anchors.
- 4) Fix the screws.

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7.2 How to install 2(Adjust horizontal angle)

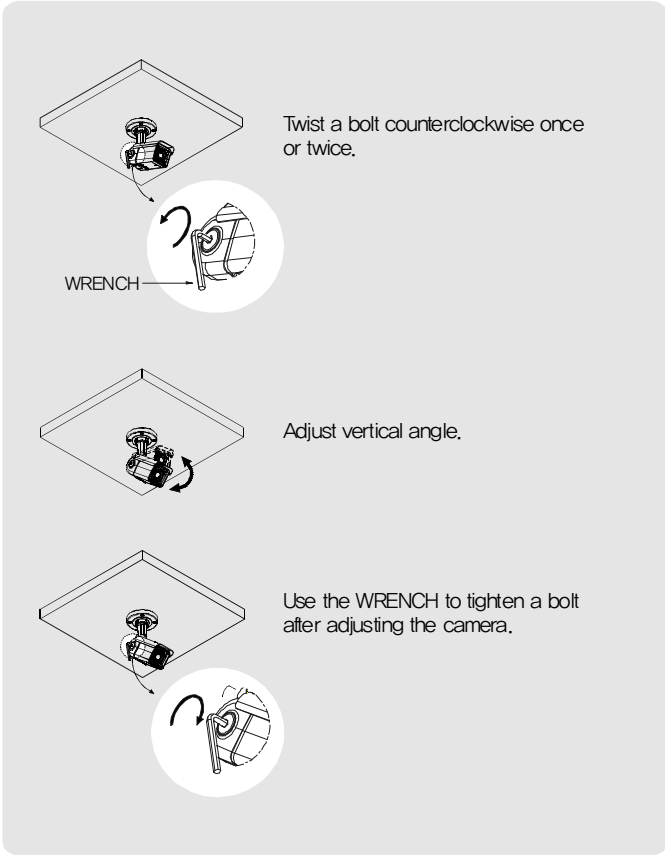
- 1) Loosen a bolt to adjust horizontal angle of the camera.
- 2) Use the WRENCH to tighten a bolt after adjusting the camera.



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7.3 How to install 3(Adjust vertical angle)

- 1) Loosen a bolt to adjust vertical angle of the camera.
- 2) Use the WRENCH to tighten a bolt after adjusting the camera.



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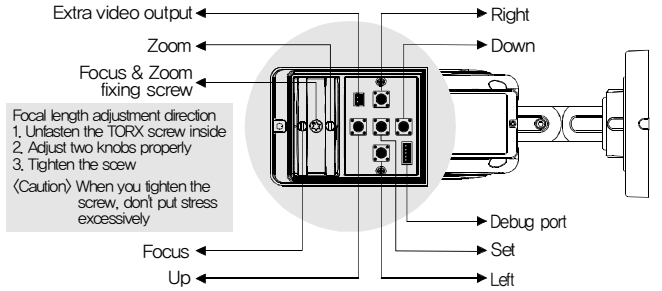
8. SPECIFICATION

Model No.	SK-P500/M846AI	SK-P500D/M846AI
Image Sensor	1/3" SONY SUPER HAD CCD II	
Effective Pixel	768(H) x 494(V) Pixel(NTSC), 752(H) x 582(V) Pixel(PAL)	
Cell Size	6.35 μ m(H) x 7.4 μ m(V)(NTSC), 6.5 μ m(H) x 6.25 μ m(V)(PAL)	
Scanning System	2:1 Interlace	
Sync. Type	Internal	
Resolution	650 TV-Line(COLOR), 720 TV-Line(B/W)	
S/N	52dB or More(AGC OFF)	
Video Output	1.0 Vp-p(Sync. Negative) Termination 75 Ω	
Min. Illumination	0.01 Lux(F1.2), 0.0001Lux(Sense up) 0 Lux(40M Range) ~ Indoor	
Gamma	$\gamma = 0.45$ typ.(0.2 ~ 1.0)	
OSD	Yes(Multi Language)	
White Balance	ATW(2,500°K ~ 9,500°K)/MANUAL/AWC	
Shutter Speed	1/60(1/50) ~ 1/100,000sec	
Sense up	Auto(Selectable limit 2X ~ 1024X)/FIXED/OFF	
Backlight	OFF/BLC/HLC/DWDR	
AGC	LOW/MIDDLE/HIGH/OFF	
DNR(3D)	AUTO/LOW/MIDDLE/HIGH/OFF	
Motion Detection	ON/OFF(4 Zone)	
Privacy Zone	ON/OFF(8 Zone)	
Mirror	ON/OFF	
Day & Night	ICR/Electronic(AUTO, COLOR, B/W)	
LED Brightness	30pcs, Smart IR	
Blemish Compensation	AUTO/OFF	
Communication(option)	RS-485(Protocol : Pelco D)	
Lens	Day & Night Vari-focal auto iris lens	
Power Supply	Regulated 12V DC $\pm 10\%$	12V DC/24V AC Dual voltage
Current Consumption	Max. 800mA(at 12V DC, 24V AC) : LED ON	
Fan, Heater	Option, Yes	
Operation Temp.	-20°C ~ 50°C	
Preservation Temp.	-20°C ~ 60°C	
Dimension	79(W) x 80.5(H) x 172.3(D)mm	
Weight	Approx. 1.2kg	

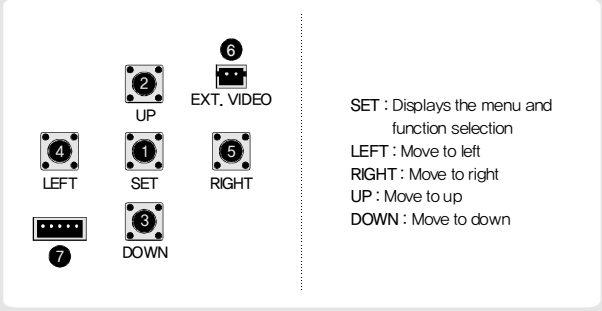
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9. FUNCTION

9.1 Setup for camera functions



1) Function setting combination



2) OSD menu

- ①SET : Press "SETUP" button to go to the menu.
- ②UP, ③DOWN : Use "UP" or "DOWN" button to go to the up or the down.
- ④LEFT, ⑤RIGHT : Use "RIGHT" or "LEFT" button to go to the right or the left.
- ⑥EXT. VIDEO : Extra video output terminal for installation. The cable is option.
- ⑦DEBUG PORT : It is used for upgrading the product function and after-sales services.

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9.2 Camera menu setting

Function setting menu	Select menu	Sub menu	Contents	
1. EXPOSURE				
LENS	MANUAL	BRIGHTNESS	0~99 : Adjust brightness with a manual iris lens AUTO, 1/60, 1/100FLK, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/100000 : Adjust shutter speed	
		E. SHUTTER	0~99 : Adjust brightness with a DC iris lens AUTO, 1/60, 1/100FLK, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/100000 : Adjust shutter speed	
	DC	BRIGHTNESS	0~99 : Adjust brightness with a DC iris lens AUTO, 1/60, 1/100FLK, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/100000 : Adjust shutter speed	
		E. SHUTTER		
AGC	OFF, LOW, MIDDLE, HIGH		Determines that use the AGC function or not and AGC level selectable(You can not use the Auto D&N change mode when AGC is off)	
SENSE-UP	AUTO, OFF, X2, X4, X8, X16, X32, X64, X128, X256, X512, X1024		Using sense up when it is low luminance (x2~x1024)	
BACKLIGHT	BLC	BLC LEVEL	OFF, LOW, MID, HIGH : Use BLC function or not / level selectable	
		TOP	0~15 : Adjust top position of BLC zone	
		BOTTOM	1~16 : Adjust bottom position of BLC zone	
		LEFT	0~15 : Adjust left position of BLC zone	
	HBLC	RIGHT	1~16 : Adjust right position of BLC zone	
			OFF : Deactivates HBLC function	
			MANUAL HBLC LEVEL : OFF, LOW, MID, HIGH TOP : 0~15 BOTTOM : 1~16 LEFT : 0~15 RIGHT : 1~16	
			} Make a zone for HBLC	
		HLC	MODE	ALL DAY : Activates HBLC function all day NIGHT : Use the function at night only
			HLC LEVEL	1~100 : Level adjust
		MASK 1~4		ON TOP : 0~33 BOTTOM : 1~34 LEFT : 0~44 RIGHT : 1~45
			} Make a zone for HLC mask	
				OFF : HLC MASK OFF
3D-DNR		OFF, LOW, MID, HIGH, AUTO		0~20 : DWDR level adjust
RETURN			Reduce noise in low illumination(Level selectable) Move back to previous menu	
2. WHITE BALANCE				
AWB MODE	MANUAL	ATW	Color temperature 2500~9500°K	
		M-WR	0~128 : Adjust the Red value to shift the color of the object	
		M-WB	0~128 : Adjust the Blue value to shift the color of the object	
	PUSH	RETURN	Move back to previous menu	
			Find the optimal white balance for current luminance environment	
R-Y GAIN	0~255		Adjust Red tone of the image	
B-Y GAIN	0~255		Adjust Blue tone of the image	
RETURN			Move back to previous menu	

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3. DAY&NIGHT			
D&N MODE	AUTO	DAY-NIGHT	7~30 : Select brightness of illumination about changing the day-night mode by AGC
		NIGHT-DAY	0~15 : Select the duration time
		DELAY TIME	Move back to previous menu
		RETURN	6~36 : Select brightness of illumination about changing the day-night mode by AGC
		A. DAY-NIGHT	6~36 : Select brightness of illumination about changing the day-night mode by AGC
	AUTO-CDS	A. NIGHT-DAY	0~255 : Select brightness of illumination about changing the day-night mode by CDS
		C. DAY-NIGHT	0~255 : Select brightness of illumination about changing the day-night mode by CDS
		C. NIGHT-DAY	0~15 : Select the duration time
		DELAY TIME	Move back to previous menu
		RETURN	Fixed at color
COLOR		Fixed at B/W	
B&W			
EXT	DELAY TIME	0~15 : Change the color--> B/W by external signal(Not available)	
	RETURN	Move back to previous menu	
BURST	ON, OFF	Transmit the burst signal or not in B/W mode	
C. SUP	0~100	Color suppress controllable	
A. SUP	0~100	Iris suppress controllable	
SMART IR	ON, OFF	Decreases screen saturation of objects within a short range	
RETURN		Move back to previous menu	
4. IMAGE ADJUST			
MIRROR	MIRROR OFF	Set a vertical image inversion	
SHARPNESS	0~30	Sharpness adjustable	
GAMMA	USER	0.45, 0.55, 0.65	Set a gamma value
		GAMMA	0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 0.95, 1.00 : Gamma adjustable
		RETURN	Move back to previous menu
		SET LEVEL	0~30 : Use the LSC and level adjustable
		RETURN	Move back to previous menu
	LSC	ON	LSC OFF
OFF		LSC OFF	
RETURN		Move back to previous menu	
5. MOTION			
MOTION	ON, OFF	Motion detection function activate/deactivate	
AREA	AREA 1~4	TOP	0~143 : Make a zone for motion detection
		BOTTOM	2~145 : Make a zone for motion detection
		LEFT	0~190 : Make a zone for motion detection
		RIGHT	2~192 : Make a zone for motion detection
		RETURN	Move back to previous menu
	RETURN	Move back to previous menu	
SENSITIVITY	1~30	Motion detection sensitivity	
DISPLAY	OFF, MESSAGE, TRACE	Select notification method of motion detection	
HOLD TIME	0~15	Set the duration of alarm out	
ALARM OUTPUT	ON, OFF	Alarm ON/OFF	
RETURN		Move back to previous menu	
6. PRIVACY			
MASK 1~8	OFF	Display each privacy mask or not	
	ON	DOT SEL	L, TOP, L, BOT, R, BOT, R, TOP : Determines which of the 4 vertices of each MD area is to be used
		DOT XY	ENTER SETTING : Determines the coordinate
		MOVE XY	ENTER SETTING : Move the mask
		COLOR	BLACK, WHITE, ... : Select mask color(8 colors)
		RETURN	Move back to previous menu
RETURN		Move back to previous menu	

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9.3 How to control through RS-485 communication(option)

- 1) Match the camera with controller's ID, baudrate and protocol
- 2) Up, Down, Left and right of Jog lever is same as Up, Down, Left and right of RS-485 controller
- 3) Enter of Jog lever is the same as menu key or IRIS open key of RS-485 controller

9.4 Cable array(option)

		A : ORANGE(RX +) B : WHITE(RX -)
No.	Function	Remark
A	RX +	RS-485A
B	RX -	RS-485B

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